

# DESCRIPTION

## (WHOLESOME TOOTHBRUSH WITH SPREADING BRUSH PART FOR SANITARY PURPOSE)

### 5 1. TECHNICAL FEILD

The invention relates to the wholesome toothbrush where the brush part is spread out by partial improvement on the brush structure previously patented with Korea Utility Model Patent No. 2000-8396 by present inventor in order to facilitate brush wash and dry by spreading plies out after using the teeth brush in the ply status of shrunken and concentrated.

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### 2. BACKGROUND ART

Looking into the toothbrush structure referred to the previous utility model patent No. 2000-8396 brush pieces where brushes are planted is assembled, but can be disassembled,  
15 into a porous leaf spring and helping out sanitary and economic use of the toothbrush with connecting bar having a push-out button mounted on operating plate which contracts above brush pieces to spread out.

However above patented toothbrush has a problem with free-motion of the brush pieces due to displacement of the push-out button when brushing teeth as the push-out button  
20 mounted and connected to the connecting bar is located on the toothbrush rod and since the toothbrush can not make rugged member on both sides of brush pieces fully covered with above operating plate with exposed bottom member in the middle, it also has the problem with generation of displeasure caused by bumping noises between teeth and above rugged member when brushing teeth. Also the toothbrush is uncomfortable to brush inner side of  
25 grinding teeth as other conventional toothbrushes brushing those teeth having the grip as much close to the mouth as possible to make the brush head parallel to the teeth array.

### 3. DISCLOSURE OF INVENTION

With further reference to the drawings the present invention is described by following details.

As shown on Fig.1 of entire perspective view of the invention with partial  
5 fragmentary views, the present invention is of the construction composed of the flexible  
groove 12 to enable insertion of protruded guide 4 into the middle of ruling protrusions 6, 6',  
the ribs 11, 11' covering main body of brush part 100 when brush pieces 2', 2'' are spread out  
on both side's surfaces of operating plate 300, the primary and secondary ruling grooves 10,  
10' in step where the ruling protrusion 6 is engaged in front of inner wall of protruded guide  
10 4 enable angle adjustment to inner direction by having fore-end of operating plate 300 push  
slanted protrusion 8 of brush piece 9 used for angle adjustment when the ruling protrusions 6,  
6' of the operating plate 300 are ruled on the secondary ruling groove 10', the brush piece 9  
used for angle adjustment and protruded on top surface of the upward slanted protrusion 8  
fixed to frond end of the brush part 100, the operating plate 300 connected to connecting bar  
15 8 in order to linearly spread above brush part 100 in correspondence to the movement of  
push-out button 200 having ruling protrusions 6, 6' protruded to both sides of insert guide 5  
inserted to the protruded guide 4 of toothbrush rod 1 and above brush part 100 combined  
with numbers of brush pieces 2', 2'' inlaid to curved leaf spring 3, planted with brushes 2  
therein and fixed to the frond end of the toothbrush rod 1.

20 In the following drawings the number 13 without any description herein is the rugged  
member of the brush part 100, the number 14 is the guide surface of the protruded guide 4  
and the number 15 is the third ruling groove of the protruded guide 4.

Such toothbrush invented as described above is improved product in the function of  
comfortable use from previously patented toothbrush coded as Utility Model Patent No.  
25 2000-8396 and the further descriptions of improved parts for their operations are disclosed  
below to the reference of the following drawings.

The brush part 100 is supported as the state of linear when foregoing ruling  
protrusions 6, 6' are fixed on the ruling groove 10 by manipulating the push-out button 200  
as depicted on Fig. 3 and thereof the fore-end of operating plate 300 is placed on the starting  
30 area of the slanting surface on the slanted protrusion 8 of the brush piece 9 used for angle  
adjustment.

Therefore when brushing tooth with the toothbrush constructed with above featured technique, it can be comfortably used without any deformation of the brush part 100 that may be generated from free-moving of the push-out button 200 as its' traverse range is located on top of the toothbrush rod 1 being isolated from the grip.

5 Also the present invented toothbrush can be used without having any discomfort noise from bumping between tooth and rugged member as ribs 11, 11' are mounted on and cover both sides of operating plate 300 which covers main body part of brush part 100 to hide rugged member 13 of brush pieces 2', 2''.

The present technique enables to adjust the angle of fore-end of brush part 100 to a  
10 certain range inward in order to clean the inner side of grinding tooth which is normally uncomfortable to brush. The foregoing angle adjustment is enabled by inward banding of the brush piece 9 in opposite direction to the curve of the leaf spring 3 as depicted on Fig. 4 with its' elastic force having linear tension force directed to slanted surface cooperated with fore-end of the operating plate 300 while push-out button 200 moves incorporating with the  
15 top surface of the ruling protrusions 6, 6' corresponded to the inner guide surface 14 as depicted on Fig. 7b when moving the push-out button 200 to the arrowed direction shown on Fig. 7a after isolating ruling protrusions 6, 6' from the ruling groove 10 by pushing the foregoing button 200.

Accordingly when the ruling protrusion 6, 6' of the button 200 reaches to the  
20 secondary ruling groove 10' the button 200 is fixed to a certain position in correspondence with fore-inner wall of the guide protrusion 4 cooperated with fore surface of the insert guide 5 when the ruling protrusions 6, 6' are mounted on the secondary ruling groove 10' by counter force of the leaf spring 3.

And therefore it facilitate the tooth brushing on inner side of grinding tooth by  
25 placing the brush piece 9 used for angle adjustment, and slanted inward for a certain degrees, on the inner side of the grinding tooth.

As previously described the present invention with the brush part 100 bent inward for a certain degree or as linear enables maximized cleaning effect. To wash the present toothbrush the brush pieces 2', 2'' can be spread out by the curved leaf spring 3 of the brush  
30 part 100 when fixing the button 200 with the ruling protrusions 6, 6' hooked to the third ruling groove 15 by corresponding hind surface of the insert guide 5 and rear-inner wall of

the guide protrusion 4 by moving the push-out button 200 to the arrowed direction as shown on Fig. 5.

The push-out button 200 of the present invention was designed to facilitate easy assembly utilizing the flexible groove 12 in order to insert guide protrusion 4 into the middle area of the ruling protrusion 6 as depicted on Fig. 7 and once it is assembled the button 200 is free from separation.

#### 4. BRIEF DESCRIPTION OF DRAWINGS

- FIG. 1 is an entire perspective view of the present invention with partial fragmentary views
- 10 FIG. 2 is an enlarged perspective view of the brush part of the present invention.
- FIG. 3 is a sectional view of the brush part of the present invention shown as linear.
- FIG. 4 is a sectional view of the brush part of the present invention shown curved to the direction of curved leaf spring.
- FIG. 5 is a sectional view of the brush part of the present invention shown fully curved to the
- 15 opposite direction of curved leaf spring.
- FIG. 6 is a sectional view of the brush part of the present invention shown supported by the operating plate.
- FIG. 7 is a sectional view of the ruling protrusion of the push-out button shown inserted to the ruling groove.
- 20 FIG. 8 is a sectional view of the ruling protrusion of the push-out button shown disassembled from the ruling groove.

#### < ANNOTATION OF THE NUMBERS >

|    |                     |                       |                          |
|----|---------------------|-----------------------|--------------------------|
| 25 | 100 : Brush Part    | 200 : Push-Out Button | 300 : Operating Plate    |
|    | 1 : Toothbrush Rod  | 2,2' : Brush Piece    | 3 : Leaf Spring          |
|    | 4 : Protruded Guide | 5 : Insert Guide      | 6,6' : Ruling Protrusion |

7 : Connecting Bar    8 : Slanted Protrusion    9 : Brush Piece used for Angle Adjustment  
10,10' : Primary, Secondary Ruling Grooves    11,11' : Ribs    12 : Flexible Groove  
13 : Rugged Member    14 : Guide Surface    15 : Third Ruling Groove

## 5 5. INDUSTRIAL APPLICABILITY

As foregoing description of a preferred embodiment of the invention explained, the present invention prevents inconvenience use from displacement of the push-out button as its' traversing part is located on top of the toothbrush rod being isolated from the grip, facilitates to brush the inner side of grinding tooth by having the brush piece used for angle  
10 adjustment mounted on fore end of the brush part, prevents bumping noise between tooth and rugged member by having the ribs covering the body of the brush part mounted on both side surfaces of the operating plate and facilitates assembling the functioned part by having flexible groove in the middle part of the ruling protrusion.

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